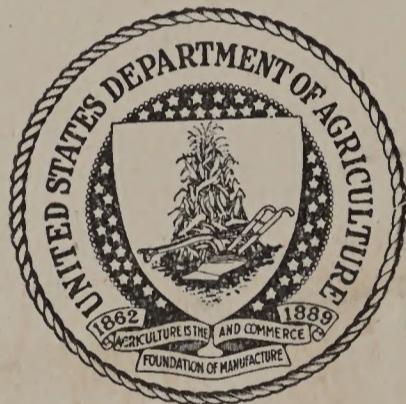


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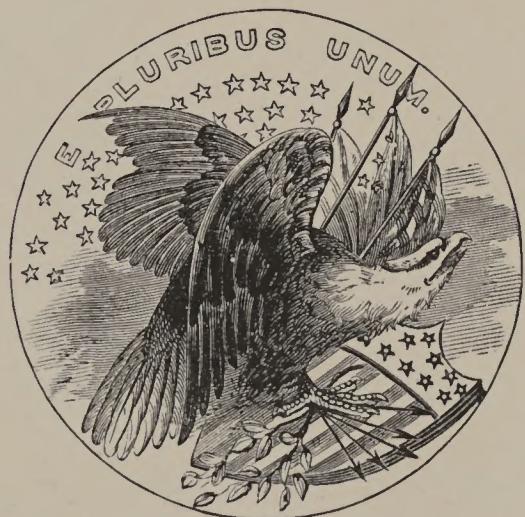
OF

AGRICULTURAL STATISTICS

OF THE UNITED STATES.

RESULTS OF OFFICIAL STATISTICAL INVESTIGATION.

BY J. R. DODGE, Statistician.



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LETTER OF SUBMITTAL.

DEPARTMENT OF AGRICULTURE,

OFFICE OF STATISTICIAN,

June 10, 1891.

SIR: The first edition of the Album of Agricultural Statistics, issued two years ago, was received with great favor by students of rural economy in this and other countries. Its limited numbers, (10,000 copies) were found to be entirely inadequate even to the requirements of a restricted and conservative scheme of distribution. The present edition of 15,000 is especially intended for libraries of reference and schools and colleges in which industrial art and social science have a prominent place.

In obedience to the public demand for graphic illustrations of statistics, which has often been reiterated, maps, charts and diagrams have from time to time been prepared, by the Statistician, for international and other exhibitions, and for educational institutions. Only a single copy of each was made, in some instances on a large scale, elaborate and expensive, for exhibition purposes. There have been urgent and repeated calls for popularization of such illustrations, by cheapening their cost and multiplying their numbers, and a more general distribution to societies, schools and individuals. The annual report, of which 400,000 copies are distributed, has furnished a medium for presentation, generally in single page diagrams, of some of the more striking and instructive facts of American agriculture, familiarized the people with this method of interpreting statistics, and excited a desire for further elaboration of methods so interesting and educational in their uses.

The work contains sixteen colored maps of the United States, each presenting a separate topic, as follows:

LIST OF ILLUSTRATIONS.

I. Percentage of unoccupied and of farm lands, comprising the superficial area of each State.	VIII. Yield of oats per acre in each State.
II. Percentage of each grand division of farm area in each State.	IX. Average value of horses in each State.
III. Acreage in corn, per 1,000 acres of superficial area, in each State.	X. Average value of cattle (exclusive of milch cows) in each State.
IV. Acreage in wheat, per 1,000 acres of superficial area, in each State.	XI. Average value of milch cows in each State.
V. Acreage in oats, per 1,000 acres of superficial area, in each State.	XII. Average value of sheep in each State.
VI. Yield of corn per acre in each State.	XIII. Average value of swine in each State.
VII. Yield of wheat per acre in each State.	XIV. Rural population of the United States, as a percentage of the total population, by States.
	XV. Average value of lands in the United States.
	XVI. Farm tenures in the United States.

These maps are mainly based on results of past investigation conducted by the Statistician. The distribution of each of the three principal cereals, which together include all but three per cent. of cereal production, has so remarkable a differentiation and so extreme a range, as to justify its selection as a leading topic. The rate of yield, based on yields of ten annual crops, showing the results of climatic adaptation, differing soils and methods of culture, is another topic fruitful in suggestion, and thus worthy of consideration. The average values of farm stock in different sections are equally suggestive of differences in breed, degree of improvement, and effect of distance from market. It is hoped that the results here embodied, in matter and form, will be found worthy of this presentation.

HON. J. M. RUSK,
Secretary.

J. R. DODGE,
Statistician.

ALBUM OF AGRICULTURAL STATISTICS.

This graphic presentation of statistical data is limited to classes of facts existing in every portion of the national territory. A distribution involving only a part of the public domain is not suited to the form of illustration adopted. Cotton, tobacco, flax, even the minor cereals, and many other products, must be treated in a different manner, and hence are not included in this geographical method of presentation. There will be opportunity hereafter for discussion of other topics by other and suitable methods.

Graphic illustrations should never be involved or obscure. A complication of forms and ideas should be avoided. Simplicity and unity are prime characteristics of every attempt to interpret facts and figures by form and color. The basis of this album is, therefore, made a map of the United States. To avoid extraneous considerations, an outline of the territory, divided by State boundaries, is left uninumbered by indications of mountains, streams, cities, or towns.

Some of these maps represent three or four constituent parts of a whole, showing by States the relative proportion of each, without reference to volume or quantity. Figures in the form of semicircles, which are equal in size for each State, are divided by segments representing the relative proportion of each constituent factor. This eliminates all considerations except the one idea of relative proportion, and enables one to make comparison, in this respect, of each State with every other.

A large number carry the single idea of geographical distribution, as of the relative area of certain principal cereals in the several States, the differences in rate of yield of certain products, and the average prices of farm animals. The local differences, in these respects, are first indicated by placing States in five groups each having a certain range of differentiation, and giving to each a grade of density of color and

a distinct peculiarity of mechanical drawing, making the gradation between the groups doubly easy of discrimination.

It is desirable, however, to make closer comparison than is shown in five classes or groups. The range of differences within a group may be considerable; therefore, in several of these maps, a scale is made, with the average for the United States as zero; and the percentage of each State above or below this average is indicated in plain figures, with the plus or minus prefix, enabling one not only to see the exact relation of each State to the national average at a glance, but also to find as readily the relation between any one State and any other.

Upon each map there is placed a table which gives the figures on which the graphic delineation is based. With all the aids to quick apprehension of the meaning of the presentation, a simple and appropriate graphic method, ample explanation, and the entire body of fact which the map illustrates, it is believed that the series will prove an instructive and valuable means of popular education.

In the first map of the series, the blue section of each semicircle shows where the land not yet taken for farms is found. Blue is the almost exclusive color west of the Missouri, it takes large proportion in the South, and in the Eastern and Middle States it covers a much larger part of the surface than in the Ohio Valley. In the whole country it represents 711 in every 1,000 acres. The farm lands comprise 289 acres in every thousand, of which 153 are productive or "improved area," 103 are in woodland, and 33 acres are unproductive, including old fields, swamps, ledges, and other technically "waste" areas, most of which are susceptible of improvement or reclamation.

Relative to woodlands, it should be carefully observed that only the forest lands in farm areas have ever been reported by the census. The area "not in farms" has woodlands also;

in the South it is nearly all in wood; in the Eastern and Middle States it is mainly wooded area, though the timber has been culled more or less closely in much of it; while in the western regions of prairies and plains, only the valleys of streams and sheltered slopes of mountains are covered with woody growths, a part in the western coast very heavy, and other portions in the Rocky Mountains thin and scattered. It is probable that in the total area, including that portion not divided into farms, the forest growth would approximate 250 acres in every thousand.

The second map of the series includes only the farm area, and divides productive lands into tillage and grass lands. The farms of the Rocky Mountain region show a large proportion of "unproductive lands," not because of their want of fertility, but from insufficient means for irrigation and other preparation for use. Their owners are providing areas for future utilization. The proportion of woodland is not a percentage of the total land area, but of the farm area. The range is very wide, from a fraction of one per cent. in Utah to sixty-six per cent. in Florida. Going eastward from the central mountain plateaus, it is 3.3 per cent. in Nebraska, 11.2 in Iowa, 15.6 in Illinois, 29.1 in Indiana, 24.4 in Ohio, 29.4 in Pennsylvania, and 24.1 in New Jersey.

The third map illustrates the distribution of maize, the most generally cultivated, occupying the largest acreage, and producing the largest value of any crop in arable culture. It is now found in every part of the national domain, and was cultivated by the aboriginal races before the advent of the white man, and also by the prehistoric races of whose lives and industries glimpses are had in their cave-dwellings and in the excavation of their burial mounds. The eight central States which are printed in solid color are characterized by soils and climates especially adapted to corn-growing, and represent half of the national area and nearly two-thirds of the production. Kentucky and Tennessee have a small surplus; the other six, with Nebraska, which is found in the second group only because so much of its territory is as yet unoccupied, produce nearly all the corn of commerce, and are known as the seven "surplus States." The cotton States from Virginia to Alabama inclusive,

are in the second group; and those further west are less prominent in maize distribution only by reason of larger superficial area in proportion to breadth of cultivation.

The States of greatest density of wheat distribution, are five in winter wheat, and two in spring wheat, as follows: Ohio, Indiana and Illinois, in the Ohio Valley, and Delaware and Maryland, producing almost exclusively winter wheat, and Minnesota and Iowa yielding spring wheat. The spring wheat region includes the country west of Lake Michigan, and north of Missouri and Kansas, the Rocky Mountain plateaus, and a strip in New York and New England bordering on Canada. Were the distribution made in relation to population, or even cultivated area, the grouping would be essentially different, and Dakota would stand first in the first group. Several States are not included in any group, not because they produce absolutely no wheat, but because the quantity is insignificant and annual estimates of it impracticable.

The distribution of oats is naturally most dense in the Northern States, by reason of the fact that this grain requires relatively low temperature. Gradual deterioration of yield and quality attends cultivation in any part of the United States. Oats which weigh 40 to 50 pounds per bushel, in Scotland or Norway or Denmark, will usually yield lighter grain at the first planting in this country, and the weight declines annually. In the South good crops are obtained by planting in the autumn for winter growth, and the necessity for the grain as a variation of the ration for horses has made the crop popular in this region.

The differences respectively in yield of corn, wheat and oats, are illustrated by three maps, in which the national rate of yield for the past ten years is made the basis of comparison, and the relative rank of each State or Territory is expressed as a percentage above or below the general average, the ascending or descending scale being marked by plus or minus signs. On one side of the scale the actual yield in bushels, as measured by percentages of difference, is indicated, showing instantly the equivalents of these differences in actual yields.

It will be readily seen that the results of an absolutely perfect census of the products of a single year would do manifest injustice, and excite local dissatisfaction, as a basis for a show-

ing of the relative productiveness of States under existing conditions of rural development and methods of husbandry. The fluctuations in rate of yield are so wide that nothing less than a period of ten years should be averaged for such a purpose. Such an average, from the statistical records of the Department, is the fairest basis available, and may be relied upon as practically the real measure of the production of the period.

It is proper to explain that the general average for corn, 24.2 bushels, is lower than for the previous ten years, and probably below a real normal average, on account of the successive recurrence of causes of reduced production, notably in 1881 and 1887, and less conspicuously in 1883 and 1886. The averages since 1880, with two exceptions, have been lower than in any of the six preceding years. It is believed to be the result of a series of exceptional seasons, not likely to recur with such frequency in the future.

The rate of yield must not be taken as a measure of the natural fertility of a State. In the first group, in the map showing the corn yield, there are seven States, and only two are in the great corn belt, Ohio and Nebraska. Four are in the Eastern and one is in the Middle States, where small areas are highly fertilized. The second group, having a range of averages from 31.1 to 27 bushels, includes New York and most of the States north of 35° to 40° north latitude. Illinois falls into the middle group by reason of the destructive droughts that have occurred since 1880. The South has a broad area in corn, and very rich soil, though the climate is more favorable to growth of stalk than to heavy yields of grain.

The first group in wheat yields has a range of 16.6 to 19.6 bushels, and includes eleven States and Territories, of which eight are in the Rocky Mountains and on the Pacific Coast, and three in New England, and represent comparatively little wheat. The high rate of yield in one case is due to a rich virgin soil, and in the other to fertilization and cultivation. The second group, with a yield from 13.6 to 15.9 bushels, includes the winter wheat States between the lakes and the Ohio Valley, and New York, and also Dakota in the spring wheat region. Wisconsin and Nebraska occupy a position in the middle group, and Iowa a still lower place, with 10.3 bushels as the average, 16 per cent. below the national average. Very large yields have occasionally

been made in the South, though the climate is not very favorable to a high rate of production. It is possible, by selection of localities and careful husbandry, to produce crops of wheat in this region above the general average.

The averages in oats run highest in the higher latitudes and elevations. They range from 37.3 to 10.1 bushels per acre. The highest average is in Washington, which enjoys a moist climate and moderately low temperature.

Another series of five maps illustrates the value of farm animals—horses, milch cows, other cattle, sheep and swine. The State averages are those of ten annual estimates, and not for a single year. The averages are those consolidated by the Statistician of the Department of Agriculture from returns of county averages, and they represent the values upon the farms, or the price paid to farmers in the primary markets.

The apparently extraordinary range of prices will at once attract attention, but will not excite a suspicion of inaccuracy among those acquainted with the facts. The largest factor in difference in value is breed; care and feed are also important causes of difference in value; and the distance from market is another consideration affecting value.

The first group in value of horses covers a small territory, the four States, New Jersey, Rhode Island, Massachusetts and Delaware, and presents a range of prices from \$96.21 to \$87.06. The second group has a range from \$85.96 to \$75.22, comprising eleven political divisions, including New York and Pennsylvania in the Middle States, South Carolina and Georgia in the Cotton States, and Minnesota and Dakota in the Northwest. The first named are in a populous section, demanding fine stock; the next mentioned are amply able to produce a surplus, while depending on Tennessee and Kentucky and other States for a large proportion of their domestic deficiency; and the last are in an agricultural region of so rapid settlement as to render present importation an urgent necessity. The lower groups are found in agricultural districts where horses are raised for market as well as for use on the farm. In these, the culling process, for supplying the requirements of the principal markets, is continually reducing the value of the remainder, the young and the less desirable of the mature stock. In Texas the lowest average

appears because of the large number raised and the proportion of small animals of "Spanish" or Mexican origin. There are herds of horses in the Territories with a large infusion of good blood, which command somewhat higher prices.

The extremes are great in values of cattle. The lowest group represents Texan cattle, which came from Mexico originally, and from Spain more remotely—the longhorn tribes, hardy from survival of the strongest, and unimproved through generations of neglect. Until within fifteen years they were the export cattle of the United States, going to Cuba and adjacent Islands. They go there still, and five nearly represent the value of one fat shorthorn sent to England. In the more distant Western States, the grazing region, the average value is lower than in the States further east which buy two-year-olds to feed and finish for the market. There are various considerations of breed, feed and distance from market, which cause differences in average values.

The value of milch cows is indicated on a separate map. Of course the groups above the average represent the dairy districts. In some of the Territories, however, values are high because of scarcity and demand for milk and butter in mining camps, as the females of large grazing herds are not reckoned as milch cows.

The value of sheep ranges from \$3.70 to \$1.34, depending on breed and grade, quality and quantity of wool, value for meat production and distance from market. Every district has its peculiarities in sheep husbandry, including pedigree-stock growing, mutton producing, raising early lambs, and exclusive wool growing. Three-fourths of all are Merino breeds and their grades; the English breeds are numerous in some sections; and grade Mexicans are common in the Southwest.

The value of swine has an extreme range, according to average age of slaughtering, which affects the average of weight, as does also the amount and kind of feed and length of feeding season. Where swine are kept for home use mainly, and the market for a possible surplus is precarious, average prices are very low, and the stock is usually slaughtered at an early age, as pigs of small average weight. In the pork packing regions, on the contrary, feeding is liberal and weights are heavy while the demand is sure and the prices generally remunerative.

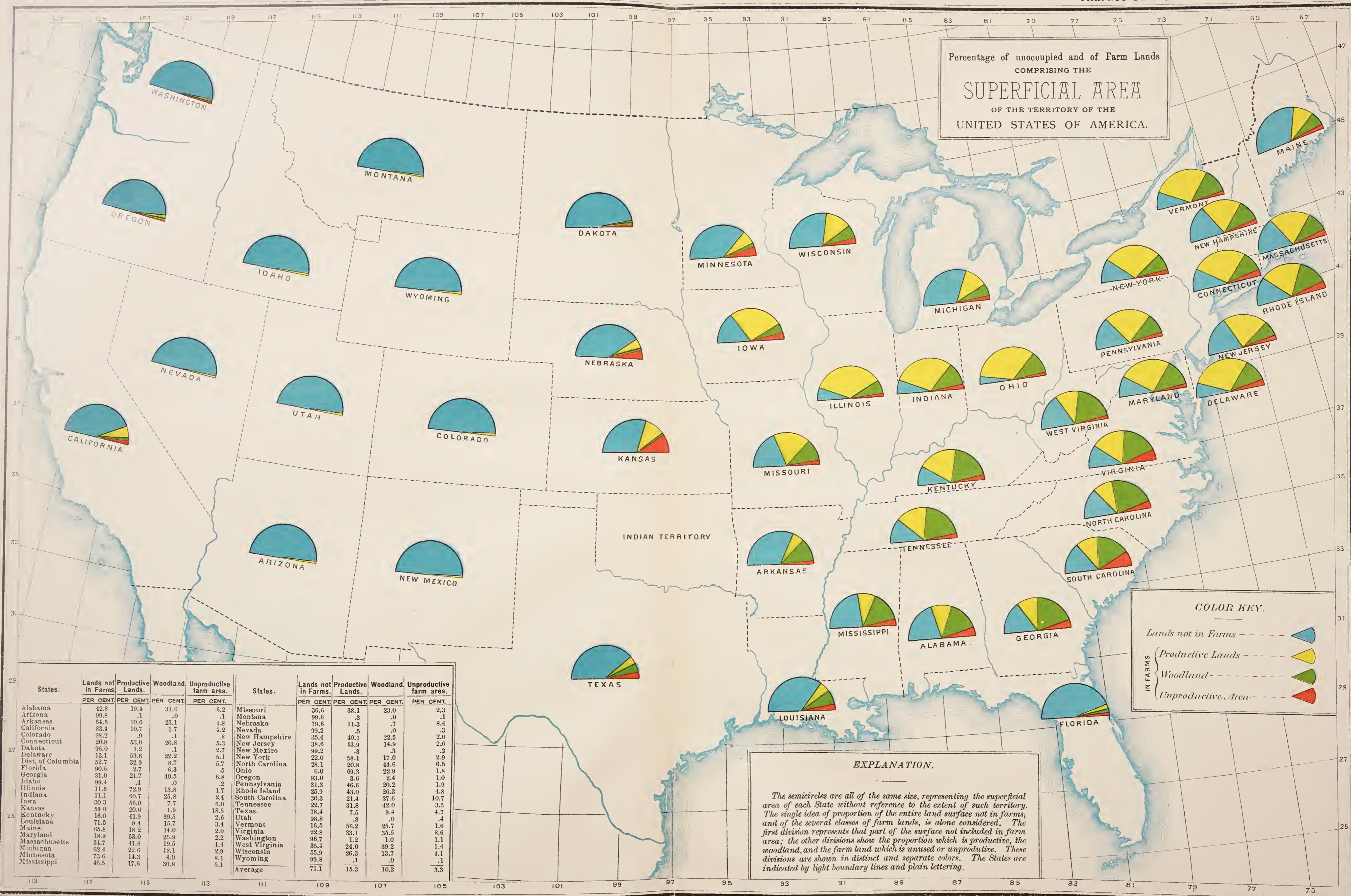
The proportion of rural population is presented

in the fourteenth map of the list. The basis is found in the record of numbers in all gainful occupations in the United States, in 1880, by segregating all those occupations which in a broad sense may be deemed related to agriculture. The proportion was about 44 per cent. of all enumerated. This was three per cent. less than in 1870. It is probable that a census on the same basis, in 1890, will show a slight further decrease. The highest group includes those States having 83 down to 72 per cent.; the lowest from 15 down to 9 per cent. It may be fairly assumed that this small percentage of farm workers produce half the supplies required in their States, and that 25 to 30 per cent. of all could feed liberally the entire population of the country.

An illustration of the variation in average values of farm lands, showing a range from \$65.16 to \$4.19, places nine States in the highest group, four in the second and seven in the middle group, which includes States with averages from twenty per cent. above to twenty per cent. below the national average, leaving twenty-six out of forty-six political divisions with very low averages, the maximum being \$14.45. This is based upon the last Census. It is hoped that the enumeration of 1890 will show a material increase in these low values, as the result of the diversification of industry and a better employment of surplus labor for which there has heretofore been no profitable use.

The last map of the album series shows the relative proportions of proprietors, tenants paying money rent, and tenants paying a share of produce in lieu of rent, in the active management of farms. It shows that 74.5 per cent. of all farms are cultivated by their owners. The proportion of share tenants is nominally 17.5 per cent. An examination of the table reveals the fact that they are mostly in the Cotton States. A more thorough investigation proves that the freedmen occupants are generally tenants in name only, with a pretence of independent occupancy, living not on separate farms but on temporary subdivisions of land without any substantial appurtenances of a farm, and without the working capital necessary to habilitate a man as a working farmer. The tenants who pay a money rent are but 8 per cent. of all.

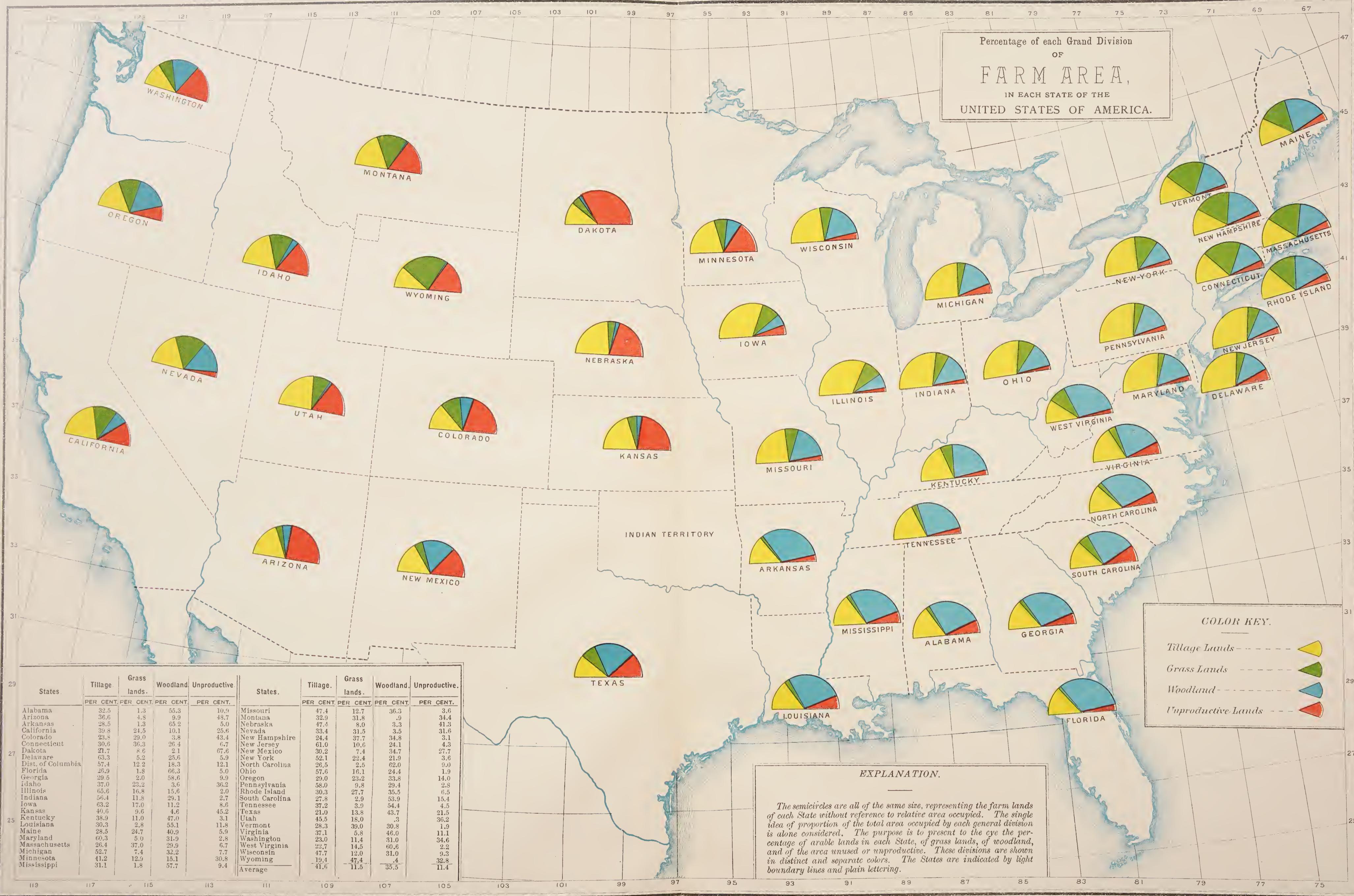
The Album of Agricultural Statistics is presented to the people of the United States as an aid to their clear and instant appreciation of some of the leading facts of American agriculture.



Percentage of each Grand Division

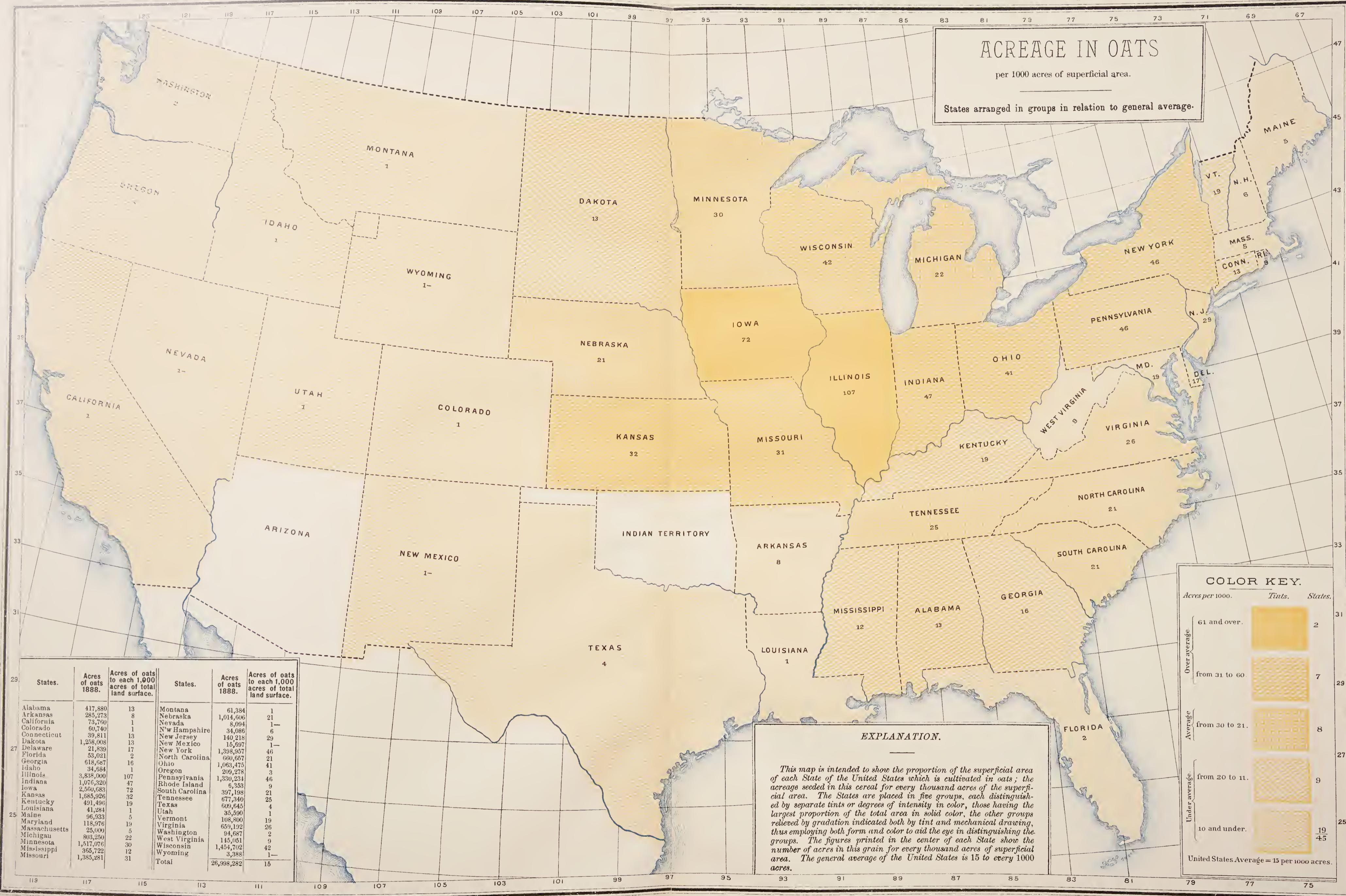
OF

FARM AREA,

IN EACH STATE OF THE
UNITED STATES OF AMERICA.

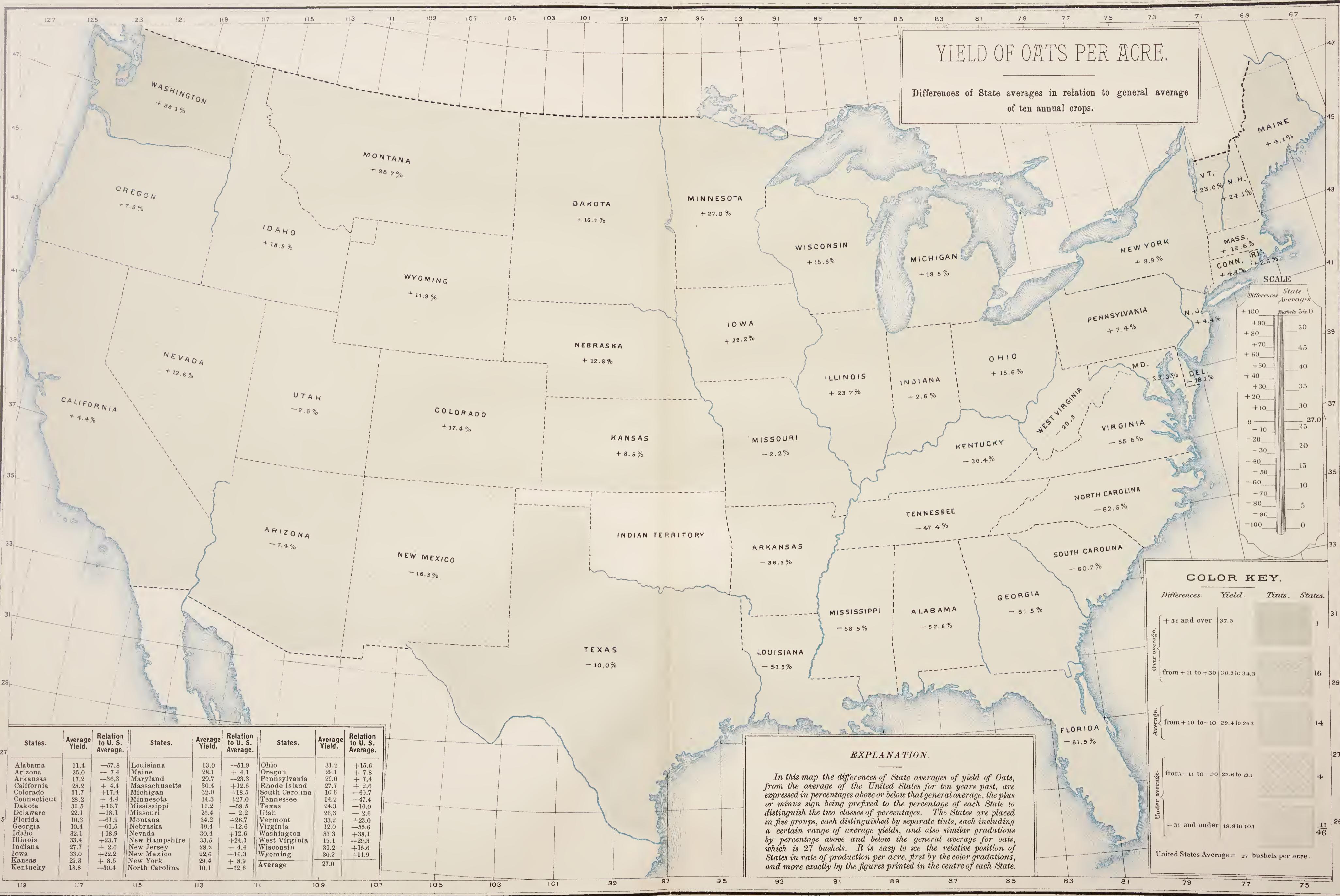






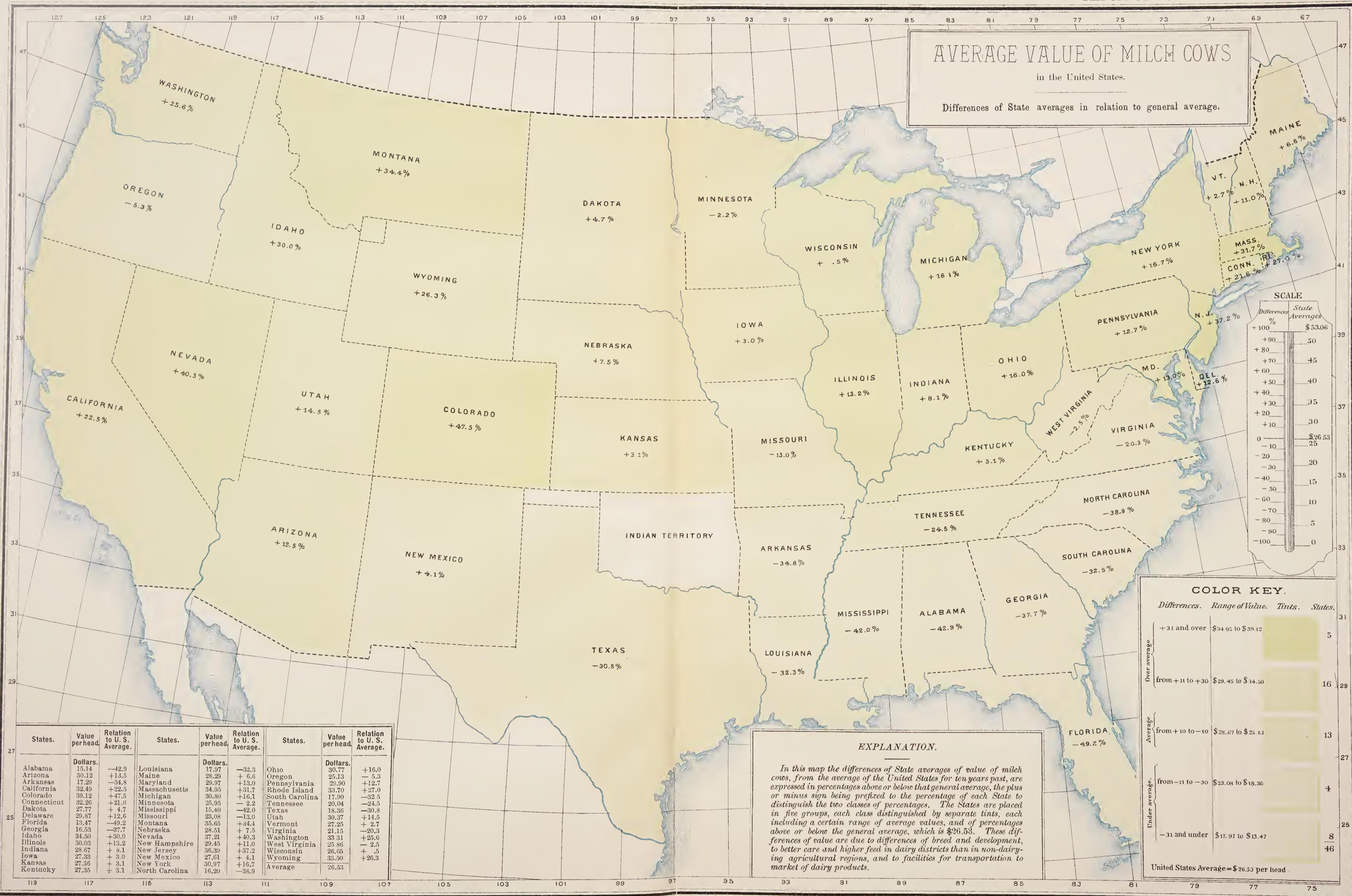


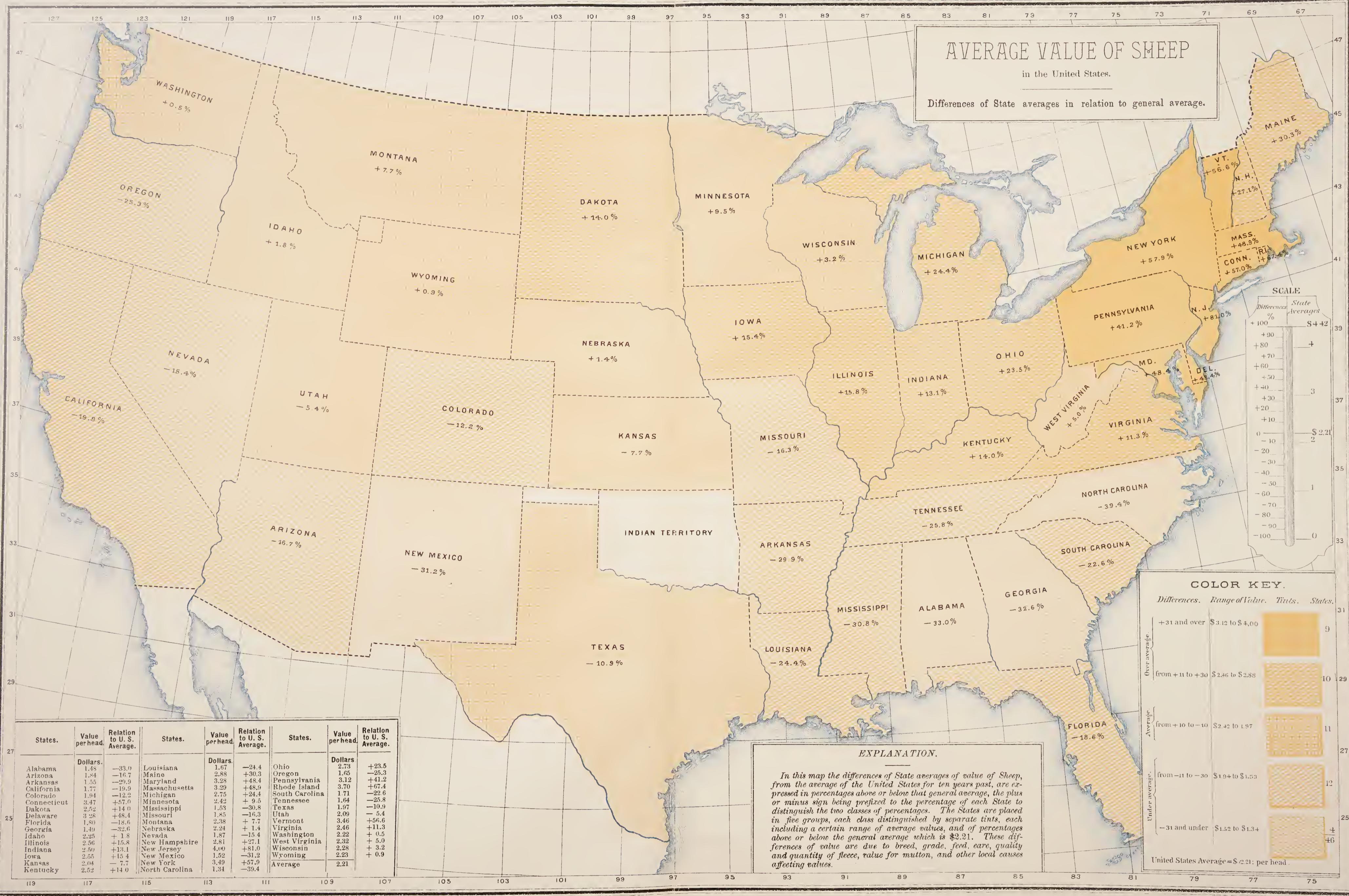


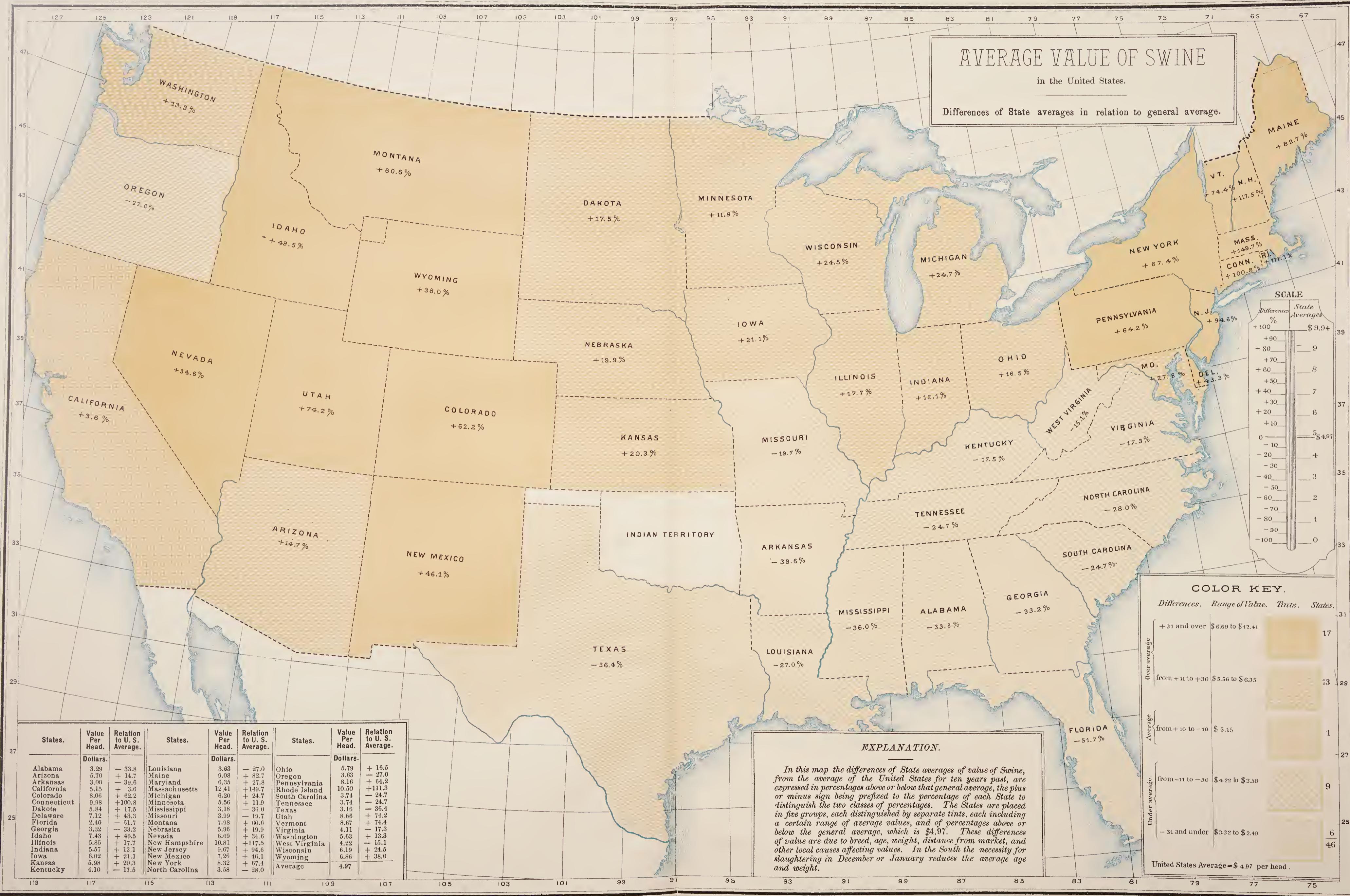


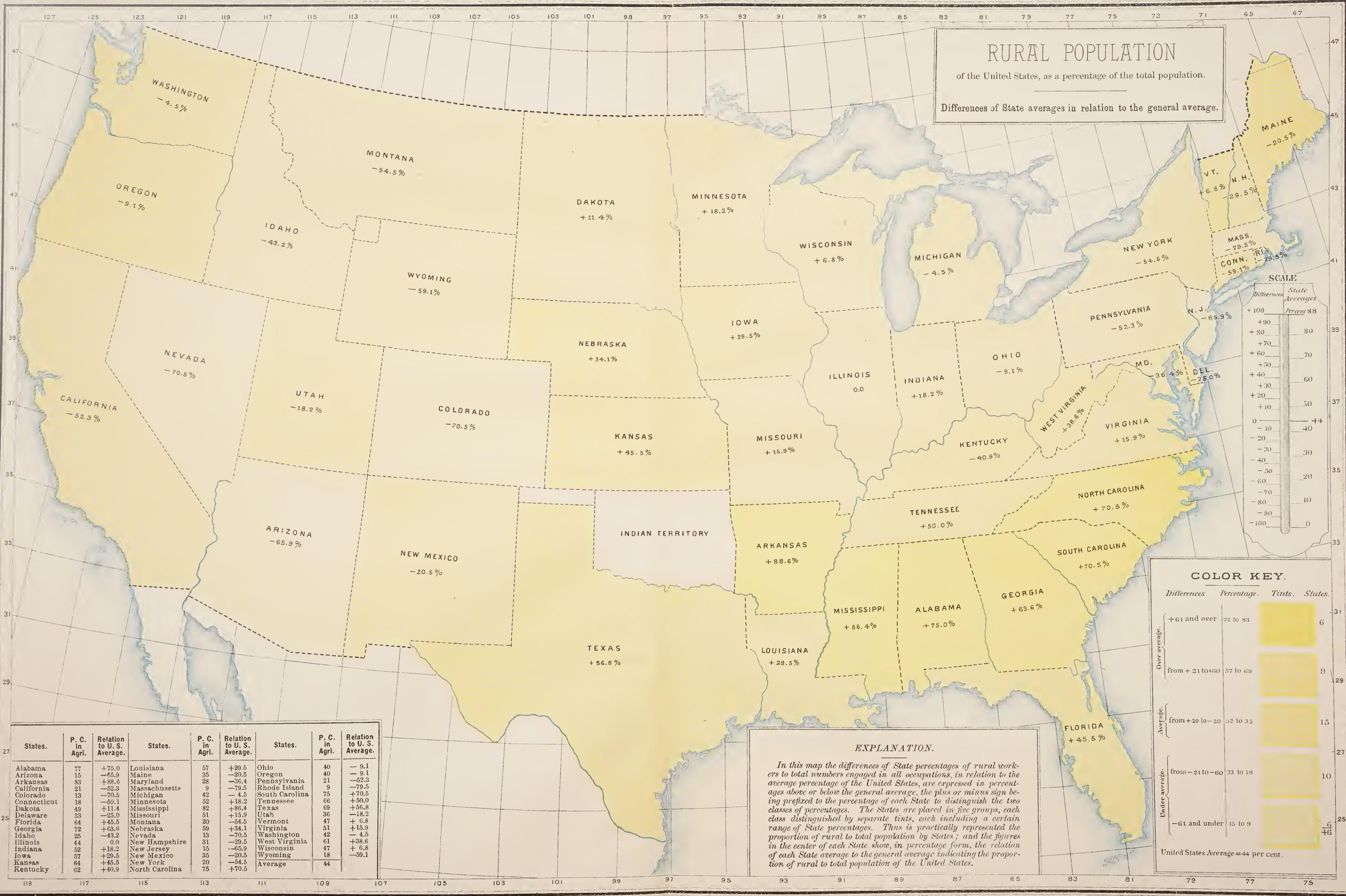


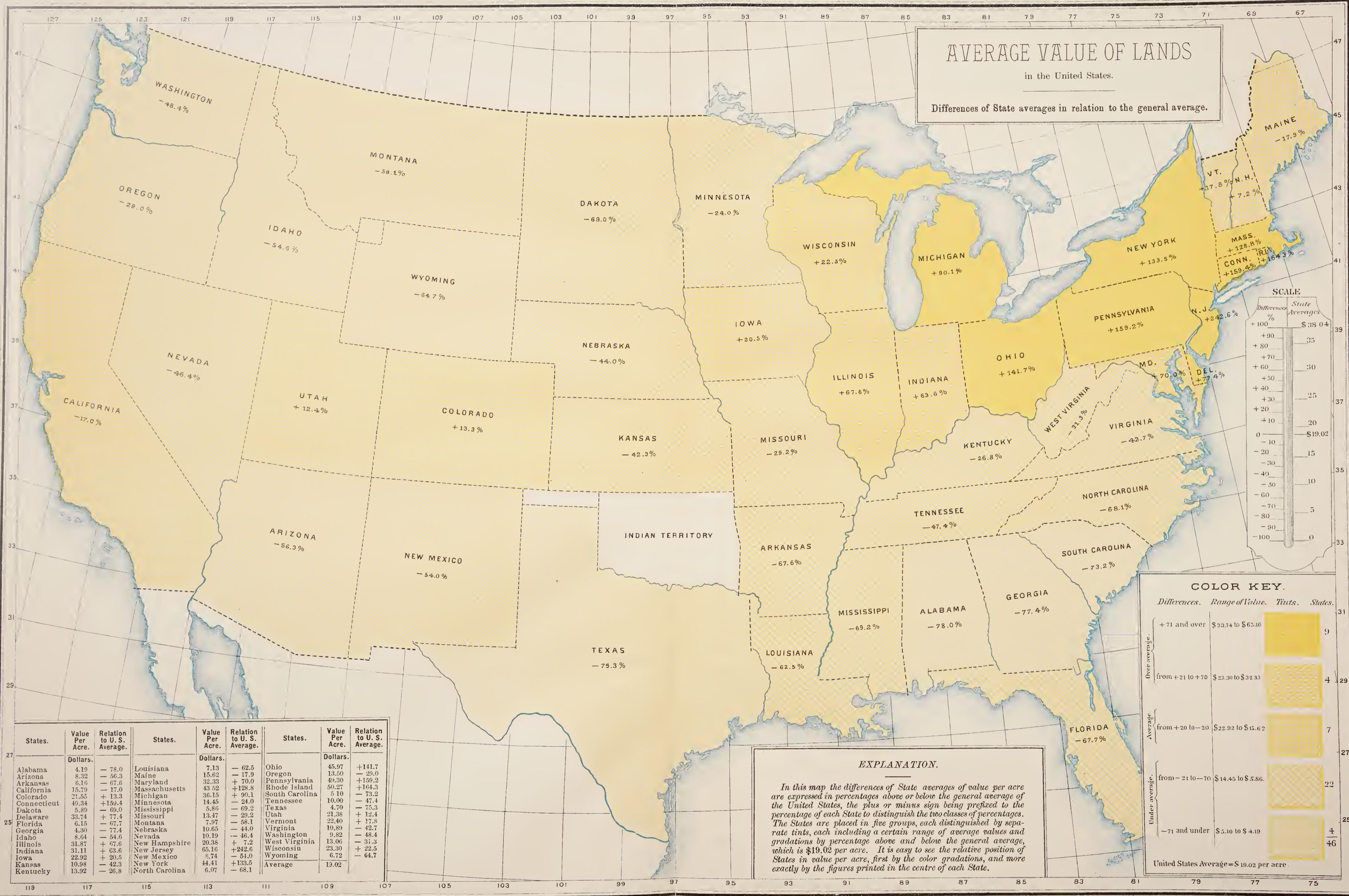












FARM TENURES

in the United States.

Proportion of Farms cultivated by proprietors, by tenants paying a money rental, and by tenants renting on shares.

